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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/857,488

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Kari Horneman

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01/25/2005

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EXAMINER

TORRES, JUAN A

ART UNIT

PAPER NUMBER

2631

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/857,488

Applicant(s)

HORNEMAN ET AL.

Examiner

Juan A. Torres

Art Unit

2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 33 and 34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7,8,13 and 17-32 is/are rejected.
- 7) ☒ Claim(s) 1-32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12152004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Claims 33 and 34 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected group II, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 12/02/2004.

Drawings

Figures 1A and 1B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The spacing of the lines of the specification is such as to make reading and entry of amendments difficult. New application papers with lines double spaced on good quality paper are required.

The disclosure is objected to because of the following informalities:

In page 2, line 35 the recitation "v" is suggested to be changed to "v" as indicated in equation 1.

In page 3, line 5 the recitation " v " is suggested to be changed to " v " as indicated in equation 1.

In page 3, line 22 the recitation " d " is suggested to be changed to " d " as indicated in equation 1.

In page 3, line 32 the recitation "a receiver as specified in claim 1" is suggested to be changed to "a receiver", as claim numbering may change during the prosecution on the application.

In page 3, line 33 to page 4 line 1 the recitation "a transmitter as specified in claim 17. According to an aspect of the invention, there is provided a receiver as specified in claim 35" is suggested to be changed to "a transmitter", as claim numbering may change during the prosecution on the application.

Claim Objections

The claims are objected to because the lines are crowded too closely together, making reading and entry of amendments difficult. Substitute claims with lines one and one-half or double spaced on good quality paper are required. See 37 CFR 1.52(b).

Claims 1-16 are objected to because of the following informalities:

In claim 1, line 3 the recitation "the user" is suggested to be changed to "user".

In claim 1, line 11 the recitation "if the" is suggested to be changed to "when the".

Claims 17-32 are objected to because of the following informalities:

In claim 17, line 3 the recitation "the data" is suggested to be changed to "data".

In claim 17, line 13 the recitation "selecting a interleaving" is suggested to be changed to "selecting an interleaving".

In claim 17, line 17 the recitation "information;" is suggested to be changed to "information; and".

In claim 17, line 21 the recitation "if the" is suggested to be changed to "when the".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In line 2 the recitation "successive symbols" is not supported by the specification (see page 15 line 2).

Claim 8 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In line 2 the recitation "same symbol" is not supported by the specification (see page 15 line 3).

Claim 13 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In line 5 the recitation of "one symbol" is not supported by the specification (see page 11 lines 9-10). In line 6 the recitation "column symbol" is not supported by the specification (see page 11 lines 9-10). In line 8 the recitation "column symbol" is not supported by the specification (see page 11 lines 9-10).

Claims 17-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In claim 17 lines 11, 12, 13 and 18 the recitation "means for" is not supported by the disclosure. The disclosure doesn't teach the means for determining the coherence time; the means for detecting the data transfer delay requirements; the means for selecting an interleaving depth; the means for detecting the radio channel quality; or the means for selecting at least another antenna (see 35 U.S.C. 112 paragraph 6).

Regarding claims 17-32, the word "means" is preceded by the word(s) "coherence time", "transfer delay" "interleaving selection" "quality and "antenna diversity" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the

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word(s) preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

Claim 23 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In line 2 the recitation "successive symbols" is not supported by the specification (see page 15 line 2).

Claim 24 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In line 2 the recitation "same symbol" is not supported by the specification (see page 15 line 3).

Claim 25 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In claim 25 line 2 the recitation "means for" is not supported by the disclosure. The disclosure doesn't teach the means for adding to the transmission through each antenna a unique signature (see U.S.C. 112 paragraph 6).

Regarding claim 25, the word "means" is preceded by the word(s) "comprises" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the word(s) preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

Claim 26 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In claim 26 line 2 the recitation "means for" is not supported by the disclosure. The disclosure doesn't teach the means for signaling the used interleaved depth (see U.S.C. 112 paragraph 6).

Regarding claim 26, the word "means" is preceded by the word(s) "comprises" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the word(s) preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

Claim 27 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In claim 27 line 2 the recitation "means for" is not supported by the disclosure. The

disclosure doesn't teach the means for signaling the used interleaved depth (see 35 U.S.C. 112 paragraph 6).

Regarding claim 27, the word "means" is preceded by the word(s) "comprises" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the word(s) preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

Claim 29 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In line 5 the recitation of "one symbol" is not supported by the specification (see page 11 lines 9-10). In line 6 the recitation "column symbol" is not supported by the specification (see page 11 lines 9-10). In line 8 the recitation "column symbol" is not supported by the specification (see page 11 lines 9-10).

Allowable Subject Matter

Claims 1-6, 9-12 and 14-16 are allowable over prior art (if the above objections are overcome).

The following is an examiner's statement of reasons for allowance: claims 1-6, 9-12 and 14-16 are allowed because the references cited fail to teach, as applicant has, a method of transmitting data in a radio channel from a transmitter to a receiver, the method comprising: setting a radio channel quality requirement according to the user

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and system information; setting a data transfer delay requirement; determining a radio channel coherence time; channel encoding the data; selecting interleaving depth using the radio channel coherence time and the data transfer delay as decisive parameters; interleaving the channel coded data; if the radio channel quality requirement is not fulfilled, selecting at least one transmit diversity antenna besides the main antenna so that the radio channel quality requirement will be fulfilled; and transmitting modulated, interleaved and channel coded data with the selected antennas, as the applicant has claimed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Calderbank (US 6430231) and (US 6661856) discloses techniques for effective wireless communication in the presence of fading and other degradations. Garmonov (US 6510173) discloses radio transmit-receive diversity methods and devices in code division multiple access (CDMA) communication systems. Hammons (US 6678263) discloses fundamental code constructions for quasi-static and time-varying channels to provide full spatial diversity for an arbitrary number of transmit antennas. Heath (US 6298092) discloses controlling a communication parameter between transmit and receive units with multiple antennas.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is (571) 272-3119. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JAT 12-16-2004


MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER